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Effect of Chlorine and Monochloramine in Drinking Water on the Developing Rat Fetus

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This study was conducted to determine the effect of chlorine and monochloramine on rat fetuses. The percentage of total defects (skeletal and soft-tissue) was increased significantly over control in the 100 mg/L HOCl group; however, monochloramine did not produce any significant changes in rat fetuses at any dose level.

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Effect of Chlorine and Monochloramine in Drinking Water on the Developing Rat Fetus. Mohamed S. Abdel-Rahman*, Mark R. Berardi* and Richard J. Bull, CMDNJ, N.J. College of Medicine, Dept. of Pharmacology, Toxicology Lab., Newark, N.J. 07103.

Chlorine dioxide (ClO_2) or monochloramine (NH_2Cl) may be considered as an alternative to chlorine (HOCl) as a disinfectant in public water supplies, since chlorination produces trihalomethanes. This study was conducted to determine the effect of chlorine and monochloramine on rat fetuses. Female rats were administered 0,1,10,100 mg/L NH_2Cl or HOCl daily in the drinking water for 2½ months prior to and throughout gestation. Rats were sacrificed on day 20 and fetuses were preserved for soft-tissue and skeletal examination. No significant increase in fetal resorptions was found in any treated group. A slight increase in skeletal variants such as incompletely ossified sternebrae or rudimentary ribs was seen in 10 and 100 mg/L HOCl groups. Soft-tissue defects, mainly improper orientation of the heart or underdeveloped suprarenal glands, were observed in the 100 mg/L HOCl group. The percentage of total defects (skeletal and soft-tissue) was increased significantly over control in the 100 mg/L HOCl group; however, monochloramine did not produce any significant changes in rat fetuses at any dose level.